

## INPUT DEVICE AND INPUTTING METHOD

## CROSS REFERENCES TO RELATED APPLICATIONS

The present invention contains subject matter related to Japanese Patent Application No. JP 2005-252690 filed in the Japanese Patent Office on Aug. 31, 2005, the entire contents of which being incorporated herein by reference.

## BACKGROUND OF THE INVENTION

## 1. Field of the Invention

The present invention relates to an input device and an inputting method, and is suitable for application to, for example, an input device used in the state of facing in an arbitrary orientation.

## 2. Description of the Related Art

In recent years, a variety of input devices have been proposed; for example, an input device having an input unit (e.g., a jog dial) operable to accept turning operations and a pressing operation as inputs has been proposed (refer to, for example, Japanese Patent Laid-Open No. 2004-46645 (FIG. 14)).

Besides, as an input device having such an input unit, in practice, there have been known cellular phones, PDAs (Personal Digital Assistants), mouse, robot apparatuses, toys, etc.

## SUMMARY OF THE INVENTION

Meanwhile, the input devices according to the related art have been designed on the assumption that they are used in the state of being directed in a predetermined orientation, and predetermined commands have been set with respect to inputs from the input unit in such a manner that the input devices are easy to use when directed in the predetermined orientation. Therefore, such an input device has the problem that when it is used in the state of being directed in other orientation than the predetermined orientation, the operating method becomes different from that when the input device is used in the state of being directed in the predetermined orientation, and the input device therefore becomes difficult to use.

Thus, there is a need for an input device which can be much enhanced in operability, regardless of the orientation in which the input device is used.

In order to fulfill the above need, according to an embodiment of the present invention, there is provided an input device including: a casing; an input unit provided in the casing; an orientation detection unit configured to detect the orientation of the casing; and a command assigning unit configured to assign commands to inputs from the input unit, based on the results of detection by the orientation detection unit.

With the commands thus assigned to the inputs from the input unit in accordance with the orientation of the casing, the commands assigned to the inputs from the input unit are changed according to the orientation of the casing, whereby it is made possible to always conduct inputting operations by the same operating method.

According to an embodiment of the present invention, the commands are assigned to the inputs from the input unit in accordance with the orientation of the casing, whereby the commands assigned to the inputs from the input unit are changed according to the orientation of the casing, making it possible to always conduct the inputting operations by the same operating method. As a result, it is possible to realize an

input device and an inputting method which can be much enhanced in operability, regardless of the orientation in which the input device is used.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. 1A and 1B are schematic diagrams showing an apparent configuration of a music reproducing robot apparatus;

FIG. 2 is a schematic diagram showing a front configuration of the music reproducing robot apparatus;

FIG. 3 is a schematic diagram showing a configuration of a musical data transfer system;

FIG. 4 is a graph showing music analysis result information and drive information;

FIG. 5 is a block diagram showing a circuit configuration of the music reproducing robot apparatus;

FIG. 6 is a schematic diagram showing the manner in which acceleration is detected by an acceleration sensor unit;

FIGS. 7A and 7B are schematic diagrams showing the manner in which gravitational acceleration varies when an ellipsoidal casing is lifted up;

FIGS. 8A and 8B are schematic diagrams showing the condition where the ellipsoidal casing is lifted up;

FIG. 9 is a block diagram showing a circuit configuration of a wheel drive unit; and

FIG. 10 is a flowchart showing a command assigning procedure.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Now, an embodiment of the present invention will be described in detail below, referring to the drawings.

## (1) Apparent Configuration of Music Reproducing Robot Apparatus

In FIGS. 1A and 1B and FIG. 2, symbol 1 denotes generally a music reproducing robot apparatus. The music reproducing robot apparatus 1 has, for example, an ellipsoidal casing 2 which is substantially ellipsoidal in shape.

In addition, the music reproducing robot apparatus 1 has a configuration in which annular and same-shaped left-side wheel 3 and right-side wheel 4 are mounted, in the manner of projecting from an outer circumference of the ellipsoidal casing 2, on a left-side vertical plane S1 and a right-side vertical plane S2 which orthogonally intersect, at positions equidistant from the center P1 of the ellipsoidal casing 2, with a horizontal rotational axis L1 which is a straight line segment connecting between both apexes P2 and P3 located on the surface of the ellipsoidal casing 2 and the farthest from the center P1 of the ellipsoidal casing 2 (i.e., the straight line segment is the major axis of the ellipsoid).

The annular left-side wheel 3 and right-side wheel 4 have an outside diameter greater than the maximum outside diameter, around the horizontal rotational axis L1, of the ellipsoidal casing 2, and are so attached as to be turnable relative to the ellipsoidal casing 2 in one direction D1 and the other (opposite) direction D2 around the horizontal rotational axis L1. This ensures that when the music reproducing robot apparatus 1 is placed, for example, on a horizontal floor, only the left-side wheel 3 and the right side wheel 4 make contact with the floor surface, whereby the ellipsoidal casing 2 can be supported by the left-side wheel 3 and the right-side wheel 4 in a horizontal state of being floated up from the floor surface, and the music reproducing robot apparatus 1 in this condition can perform self-propelled running on the floor by rotating